The U.S. Department of Energy
Presents

Workshop on Interconnecting Distributed Energy

December 12 and 13, 2001
The Sheraton Waikiki Hotel
2255 Kalakaua Avenue
Honolulu, Hawaii

Co-Sponsored
by the State of Hawaii Department of Business, Economic Development & Tourism
and the Interstate Renewable Energy Council

Workshop on Interconnecting Distributed Energy

December 12 & 13, 2001
Sheraton Waikiki Hotel, Kauai Ballroom

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AGENDA
WEDNESDAY, DECEMBER 12, 2001

7:30 AM **Registration and Continental Breakfast**

8:15 AM **Welcome**
Eileen Yoshinaka, U.S. Department of Energy

Introduction - Energy For Hawaii
Maurice Kaya, State of Hawaii
Department of Business, Economic Development & Tourism

8:45 AM **Overview of Interconnection Issues**
- The Importance of Addressing Interconnection Issues
- Technical Requirements
- Legal and Economic Issues
- Procedural Requirements

Bill Brooks, Endecon Engineering; Tom Starrs, Kelso Starrs & Associates

10:00 AM **Break**

10:30 AM **Technical Requirements for Interconnection: Codes & Standards**
- National Electrical Code
- IEEE 929 - Photovoltaic Systems and Other Inverter-Based Systems
- IEEE 1547 - Other Distributed Technologies

Bill Brooks, Endecon Engineering

12 NOON **Lunch** (Maui Ballroom)
Roch Ducey, Energy Branch, Construction Engineering Research Laboratory
Engineer Research & Development Center, Army Corps of Engineers

1:30 PM **Technical Requirements for Distribution System Integration**
- Distribution System Capacity Constraints
- Interconnection Study Requirements

Bill Brooks

2:30 PM **Legal and Economic Requirements**
- State Requirements: Hawaii's Net Metering Law
- Federal Requirements: PURPA Qualifying Facilities
- Interconnection Fees and Charges
- Standby Charges

Tom Starrs

WEDNESDAY, DECEMBER 12, 2001 (continued)

3:30 PM **Interconnection Procedures**

- Requesting Interconnection
- Handling Interconnection Requests
- Interconnection Application Requirements
- Interconnection Agreements
- Facility Inspection and Approval
- Finalizing Interconnection

Tom Simmons, Manager, Power Supply Services Department, Hawaiian Electric Company

4:00 PM **Discussion; Q&A**

4:30 PM **Adjourn**

THURSDAY, DECEMBER 13, 2001

7:30 AM **Registration and Waikiki Beach Brunch**

Renewable Energy Initiatives: Definition and Status
Heather Mulligan, U.S. Department of Energy, Seattle

9:00 AM **Interconnection Examples and Case Studies**

- Voltage Ride-Through Technology
  Paul Fetherland, Customer Technology Applications Division Energy Services Division, Hawaiian Electric Company
- Photovoltaic System on Oahu's Windward Side
  Andy Keith, Senior Environmental Scientist, Hawaiian Electric Company
- Honolulu Hale Cogeneration System Overview
  Michael Chang, Account Manager, Johnson Controls

10:00 AM **Break**

10:15 AM **Interconnection Examples and Case Studies (continued)**

- Vehicle Dealerships on Oahu and Maui
  Brad Nicolai, Wholesale Motors Inc.
- The Orchid at Mauna Lani
  Orville Thompson, Kamuela Consulting Services
- PV Power into the Grid: Net Metered Examples on the Big Island
  Marco Mangelsdorf, ProVision Technologies Inc.
- Interconnection of Distributed Wind Energy Systems
  Ed Cannon, D.E., P.E., National Renewable Energy Laboratory

11:45 AM **Interconnection Questions & Answers**

Facilitator: Tom Starrs

12:30 PM **Adjourn**

Topics / comments during discussion and Q&A Sessions

Importance of putting into place a system that allows interconnection (i.e. customer choice / marketplace flexibility) as long as safety issues are adequately addressed.

Utility may be resistant to interconnection (on-site generation of electricity) because it reduces revenue. A neutral third party or oversight body may be necessary to evaluate which safety and operational issues are legitimate reasons for denying interconnection or requiring additional equipment/costs, and which may be unnecessary.

Standby charges are anti-competitive - versus - standby charges are necessary to cover legitimate costs incurred by the utility having to keep extra capacity on "standby" in case the customer has a sudden increase in load due to on-site equipment failure; it's like an insurance policy and it's optional - versus - it's not optional; it's on the bill as an amount due; they were never given the option to decline the "insurance" unless they disconnected all their load from the utility and anyway the "demand charge" is intended to cover the costs to the utility of fluctuations in demand, why are they allowed to collect both the demand charge and the standby charge for essentially the same thing? And why is the standby charge only in place in some locations (Big Island, $11.40 per kW and Kauai, $5 per kW), why are the rates different, why no standby charges in other locations (Maui, Oahu).

Market signals allowed/agreed to by regulators are contradictory. Reducing energy demand may be encouraged (with a utility rebate), discouraged (with a standby charge), or neither, depending on how the energy efficiency is achieved. If it is done in a DSM program, the utility gives rebates. If it is done by cogeneration on site, the utility charges extra (standby charges). If it is done via conservation independently of the DSM program, the utility doesn't do anything. This does not make sense. If energy conservation is a good thing, market signals should be set up to consistently reflect that.